



ASX Announcement

25 November 2019

Hexagon Shareholders Approve Rare Earth Investment

Hexagon Energy Materials Limited (ASX:HXG) (Hexagon or the Company) is delighted to announce strong shareholder support for its updated business strategy. Shareholders voted overwhelmingly to support the change of the Company's name to **Hexagon Energy Materials**, reflecting Hexagon's expanded strategy to include down-stream rare earth processing; rare earths also being a critical component of the high growth renewable energy, energy storage and electric vehicle sectors.

At the Company's Annual General Meeting on Friday 22 November, Chairman Charles Whitfield told shareholders, "We believe that the RapidSX™ rare earth element (REE) separation technology, developed by IMC that Hexagon has optioned, has the potential to transform the rare earths value chain as it fundamentally changes the economics around new REE project development. At the same time, Western businesses and governments are becoming increasingly focused on security of supply and the RapidSX process could unlock resources and supply chains to provide a competitive alternative for industry."

Hexagon's Managing Director, Mike Rosenstreich, commented, "Picking up on Charles' remarks at the AGM, and given the strong support for Hexagon's expanded strategy and entry into REE processing, we plan to start funding development of the Commercial Demonstration Plant forthwith."

"Initial work will comprise finalisation of the capital budget and schedule, leading to commencement of front-end engineering and design work so that ordering and construction can commence early in Q1 of 2020. To earn our 49% interest in American Innovation Metals (AIM) we need to fund the US\$2 million build-out of the Demonstration Plant and global patent applications."

"We are very excited by this opportunity and with shareholder endorsement we want to get on with it. We look forward to working with IMC's principals to commercialise the RapidSX approach to meet the wide interest that we are aware of from both existing REE producers and advanced project sponsors."

Background: Investment into American Innovation Metals (AIM)

More than 99% of votes cast at the recent Annual General Meeting of Hexagon Shareholders were for a change in the nature and scale of the Company's activities through the acquisition of a 49% interest in AIM, a special purpose vehicle to commercialise the RapidSX processing technology, which separates the REEs contained in chemical concentrates produced by mine-site operators to subsequently produce rare-earth oxides (REOs) for use by various down-stream manufacturers. The RapidSX technology was developed by a private Canadian company, Innovation Metals Corp. (IMC), the 51% partner in AIM.

REE and Separation Technologies

REOs such as oxides of praseodymium, neodymium, terbium and dysprosium are the precursors used in the production of REE permanent magnets (REPMs). REPMs are critical components for more efficient traction motors for electric vehicles, and direct drive wind turbine generators for renewable power generation, as well as several key defence and hi-tech industrial technology applications.

Hexagon considers that REE separation for the production of REOs is a key supply chain constraint with over 85% of REOs produced in China in an opaque and highly controlled market. The dominant separation technology employed for REE separation is solvent extraction (SX), which in its conventional form is highly capital-intensive requiring a very large plant footprint to accommodate up to 1,500 individual mixer-settler units to achieve the desired separated REE products.

RapidSX is a form of 'accelerated' SX which IMC has developed and operated successfully at pilot scale for various mixed REE chemical concentrate types with financial support from the US Department of Defense. The pilot program demonstrated significant (70-90%) capital cost savings on the equivalent conventional SX separation plant, as well as reduced operating costs. Table 1 highlights the advantages RapidSX over conventional SX – realistically the only proven, commercial and established REE separation technology.

AIM Investment

Hexagon has a binding Investment Agreement to acquire 49% of the RapidSX™ technology for REE separation through AIM. The key points are:

- Investment is US\$6.0M, comprising:
 - US\$2.0M to build out a Commercial Demonstration Plant (CDP) within 12 months; and
 - US\$4.0M deferred payments, payable through Hexagon's share of future AIM cash flows.
- Hexagon will contribute commercial and marketing skills, identify/secure feedstocks, generate RapidSX™ licencing opportunities and sales/offtakes for REOs produced.

The CDP is planned to be financially self-sustaining following the initial investment for the build-out. Ultimate commercialisation could follow-on quickly centred on licensing agreements with interested producers.

Table 1: Features of RapidSX™ compared to conventional SX circuits

	RapidSX™	Conventional Solvent Extraction	Comment
Performance & Efficiency			
Commercial Purity	Yes	Yes	Increased Separation Kinetics <i>Faster metals separation</i> Agnostic on feedstock type <i>Robust process capable of taking LREE-rich, HREE-rich and even blends of mixed REE feedstocks</i>
REE Recovery Rates	High	High	
Processing Time	Rapid	Slow	
Time to Equilibrium	Days	Several Weeks	
CAPEX			
Equipment Cost	Low	High	Considerably reduced footprint Commercially Available <i>All construction materials, equipment and chemistry are readily available with no 'black-box' technology</i>
Separation Staging	90% Reduction	Very High	
OPEX			
Metal Inventory/WIP	Low	High	Low Costs* <\$2/kg for LREOs <\$12/kg for HREOs <i>Significantly reduced separation times</i> <i>* Estimated from pilot test program</i>
Organic Volumes	Low	High	
Labour	Low	High	
Power Consumption	Low	High	

FURTHER INFORMATION, please contact:

Mike Rosenstreich
 Managing Director
 Hexagon Resources Limited
info@hexagonresources.com
 + 61 8 6244 0349

Karen Oswald
 Investors/Media
 NWR Communications
karen@nwrcommunications.com.au
 + 61 423 602 353